

Sub B<sub>1</sub> 7

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## Brassica

Sub B27

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oleic acid, based on total fatty acid composition.

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substitution.

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desaturase gene is from a Brassica napus plant.

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## Brassica

12. The plant of Claim 10, wherein said construct comprises a full-length coding sequence of said mutant gene.

13. The plant of Claim 11, wherein said altered fatty acid composition comprises from about 1% to 10%  $\alpha$ -linolenic acid, based on total fatty acid composition.

14. The plant of Claim 10, wherein said mutant desaturase gene encodes a microsomal gene product.

15. The plant of Claim 10, wherein said mutant desaturase gene comprises a non-conservative amino acid substitution.

16. The plant of Claim 15, wherein said mutant desaturase gene comprises the sequence His-Lys-Cys-Gly-His.

17. The plant of Claim 10, wherein said mutant desaturase gene is from a Brassica napus plant.

18. A plant containing one or more recombinant nucleic acid constructs, said one or more constructs comprising:

a) at least one seed-specific regulatory sequence operably linked in sense orientation to a mutant delta-12 fatty acid desaturase gene; and

b) at least one seed-specific regulatory sequence operably linked in sense orientation to a mutant delta-15 fatty acid desaturase gene,

said mutant delta-12 and mutant delta-15 desaturase genes conferring altered fatty acid composition in seeds of said plant.

19. The plant of Claim 18 wherein the plant is a Brassica canola plant.

20. The plant of Claim 18, wherein said construct comprises a full-length coding sequence of said mutant delta-12 fatty acid desaturase gene.

21. The plant of Claim 18, wherein said construct comprises a full-length coding sequence of said mutant delta-15 fatty acid desaturase gene.

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22. The plant of Claim 19, wherein said altered fatty acid composition comprises from about 1.0% to about 10.0% linoleic acid and from about 1.0% to about 10.0%  $\alpha$ -linolenic acid, based on total fatty acid composition.

5 23. A method for altering fatty acid composition in plant seeds, comprising the steps of:

- 10 a) introducing a recombinant nucleic acid construct into a plant, said construct comprising at least one seed-specific regulatory sequence operably linked in sense orientation to a mutant delta-12 fatty acid desaturase gene;
- 15 b) obtaining progeny from said plant, said progeny producing seeds having said altered fatty acid composition; and
- c) producing seeds having said altered fatty acid composition.

20 24. The method of Claim 23, wherein said construct comprises a full-length coding sequence of said mutant gene.

25 25. The method of Claim 23, wherein said altered fatty acid composition comprises a decreased level of linoleic acid.

26. A method for altering fatty acid composition in seeds, comprising the steps of:

- 30 a) introducing a recombinant nucleic acid construct into a plant, said construct comprising at least one seed-specific regulatory sequence operably linked in sense orientation to a mutant delta-15 fatty acid desaturase gene;
- b) obtaining progeny from said plant, said progeny producing seeds having said altered fatty acid composition; and
- 35 c) producing said seeds having said altered fatty acid composition.

28. The method of Claim 26, wherein said altered fatty  
5 acid composition comprises decreased levels of  $\alpha$ -linolenic  
acid.

30. A recombinant nucleic acid construct effective for altering fatty acid composition in seeds, said construct comprising at least one seed-specific regulatory sequence operably linked in sense orientation to a mutant delta-15 fatty acid desaturase gene.

32. A vegetable oil extracted from seeds produced by  
the plant of Claim 10.

34. A vegetable oil produced by the method of Claim 21.

36. A nucleic acid fragment encoding the mutant  
30 delta-12 fatty acid desaturase of Claim 35.